

NOYES (I.P.)

METEOROLOGY.



Evidence from the Weather Maps

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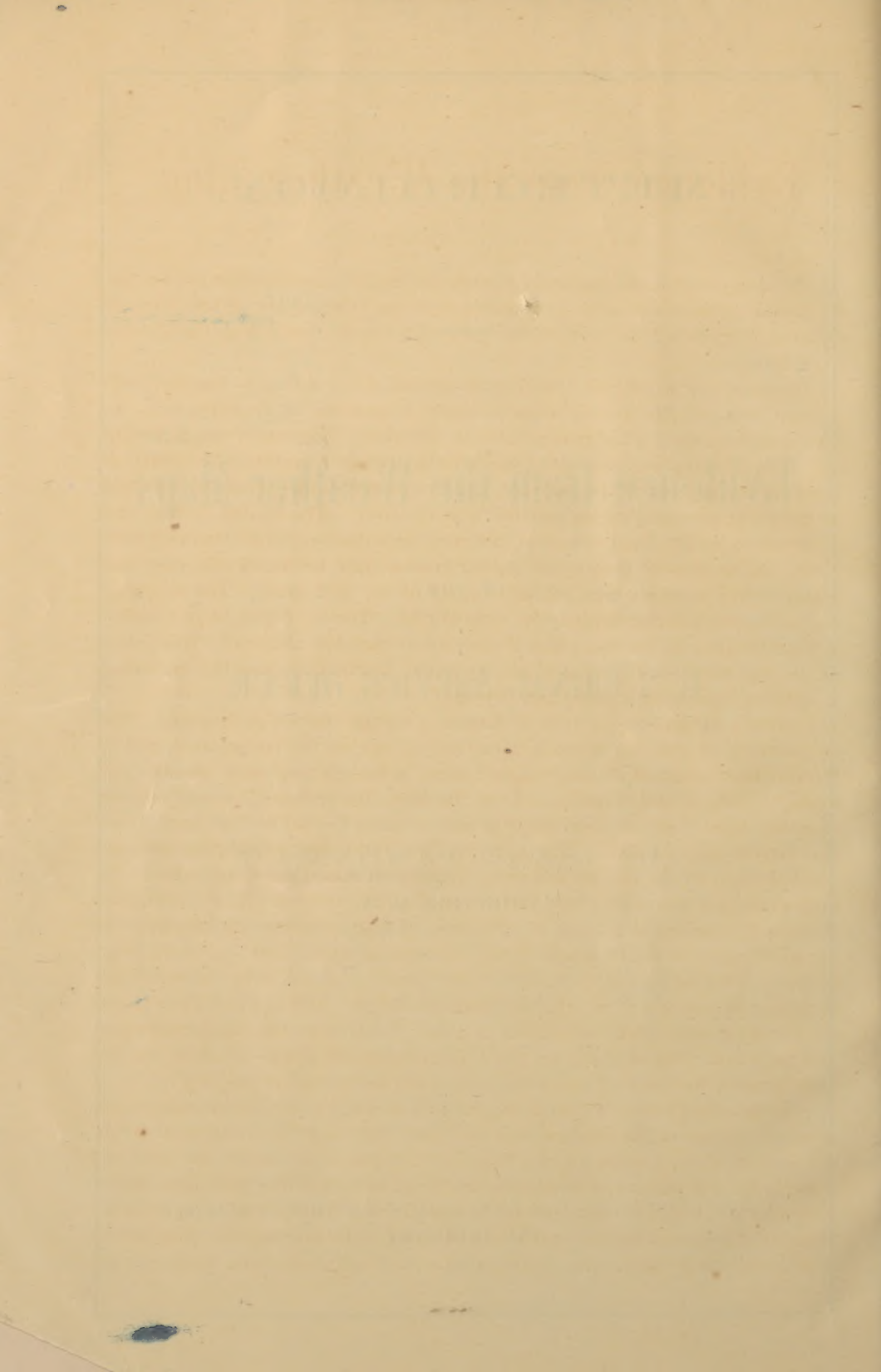
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By ISAAC P. NOYES, ✓

WASHINGTON, D. C.

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1880.



Evidence from the Weather Map.

ISAAC P. NOYES, WASHINGTON, D. C.

Nothing could more conclusively prove a scientific statement than the weather for the past year has proved the correctness of the "New View of the Weather Question," published last year, in the July and August numbers of the KANSAS CITY REVIEW.

Here in the vicinity of Washnigton, we had a hot and dry summer. All through June and July and up to the middle of August we had very little rain—no regular storms—only a few showers of short duration. Vegetation was all drying up. The hay crop was only about one-half the average quantity. The grass all about, in the city and in the country, was brown and dead. There was no feed for the cattle excepting on the marshes near the river. The smaller springs and rivulets were so dry that it was with difficulty the farmers could get water for their stock; and as most of them could get no grass or feed for their cattle, they had begun to feed them on their winter's supply of hay and grain. The supply of vegetables was suffering severely for want of rain. The cry began to go round—"What shall we do for vegetables if it continues thus hot and dry? What shall we do with our stock?" Signs of rain appeared, but no rain came that amounted to anything against such protracted dryness.

All of a sudden, on the 15th of August, a change comes o'er the scene. On the morning of this day there is a marked change in the temperature, and it "feels" like rain, and all the "signs" seem as though they were genuine and would produce favorable results. Even the more inexperienced persons seemed to realize that "we are *now* going to have a storm"—and we had one. That afternoon it rained a little. The next day (the 16th), opened sultry and warm. The afternoon of this day we had more showers—it rained more and more. By early evening it was raining hard and rained all night. On the 17th we had heavy showers all day—raining most of the time. Large quantities of rain fell. It rained all night of the 17th and during the morning of the 18th. Toward noon of the 18th it held up and the heavy clouds began to pass over to the west, and by afternoon, about 4 p. m., the sun came out bright. We had had a fine storm and just what we needed—abundance of rain. The weather was much cooler and very pleasant. The next day we heard of severe storms at sea—all along the Atlantic coast to the north of Hatteras—with much destruction of property.

As there is a cause for everything, there is or was a cause for this sudden and agreeable change in the weather, and one that may easily be understood if we will only heed the knowledge that is so plainly spread out before us. But the world at large is loath or slow to look into things new, and they have little faith. They like to "wonder" what causes various effects in nature; and to many individuals there seems a greater charm in wondering and idealizing to no purpose on what causes these effects than in the practical investigation of them, whether it be

in regard to rain—too much or too little, or in regard to the wind—its direction, force and power to cause destruction, or some other subject quite foreign to this department.

As an illustration of this spirit, I quote from a popular writer—one who has superior advantages for acquiring knowledge, and who writes much on the various topics connected with natural phenomena, yet who refuses to make a proper study of the same in connection with the weather. “Whirlwind, tornado or cyclone, aerial or electrical, such visitations as that which has ^{worked} ~~marked~~ such destruction in Missouri, and was experienced in Connecticut last summer (1878), is equally inexplicable. It comes and goes “where it listeth,” and man is powerless in its path. One feature of these exhibitions is the sharpness of the line between death and safety. Whether the width of the track be more or less, it is as sharply defined as the curbing of a city. An inch within the line and nothing can withstand the force of the elements. An inch without, and a baby’s cradle will barely be rocked. Crude as ^{has} ~~have~~ been the theories as to the cause or causes of these cyclones, they are not as ^{far} ~~much~~ proved as they have been suggested; and if we knew all about them, there would be no possible mode of either preventing or escaping from them. Whither would we fly? Ordinarily the approach of a cyclone is indicated by a deadly stillness in and oppression of the air. There is no guide as to the direction it will take, and the first impulse to get out of doors may only expose one to death from unimpeded wind.” * * * * *

Now this, as a description, is very good, and there is much good comment; still, withal, there is throughout an ignorance of the weather system that is not justifiable in one who even in this short extract shows ability to grasp a subject so simple as the weather. But one great opposition that all things have to meet is that misapplied combative spirit that prompts many people to consider it an indication of greater wisdom to be sharp, to reject or oppose a newly revealed truth, than to accept it and combat earnestly for it.

These phenomena, such as the tornadoes that visited Kansas and Missouri and passed through Connecticut last year (1878), and the hot and dry spell this summer, up to the middle of August, and the sudden change that *reached Washington* on the 15th, and produced effects of storm, wind and destruction that were felt over at least one-half of the United States, *are not* “inexplicable.” They are “unavoidable,” and so are ten thousand other things in nature. But we have implanted within us a sense whereby we may explain many things that we cannot avoid. As every sensible person knows, there is a point beyond which we can not go; but because we cannot pass that unknown barrier in the weather question as well as in all others, it does not become sensible people to complain particularly of this branch of natural phenomena and to repeat their complaints and dolefully remark that “after all we don’t know anything about this weather subject.” To be consistent these people should show their want of faith in all branches of science; for certainly there is no subject that can be carried nearer to a first cause than this of the weather. There are certain facts in this department established

beyond doubt and controversy, facts that cannot be gainsayed by the most learned and combative opponent.

The great element that causes the change in the weather is the *area of low barometer*. This, like the sun and the planets, is all the while on the move, and like a great magnet causes the ~~contraction~~ of the air of the globe, as the magnet attracts the particles of iron; and essentially works on the same principle as a moving body of heat. Wherever it (*low*) is, the air is rarified and as naturally as water runs down hill the surrounding air rushes in and takes the place of the rarified air. The movement of the air brings along with it whatever is in its way, even as the Mississippi flood takes along with it whatever floatable gets into its mighty current.

Clouds are being formed everywhere and at all hours of the day. These, balloon-like, are likewise carried along with the majestic current of air toward the area of low barometer, and when these clouds become sufficiently concentrated in and about the area of low barometer, the same wind that has forced them on becomes the principal agent in causing them, by the process of squeezing, to precipitate the moisture again to the earth. The other and minor agent in causing this precipitation is the heat of the sun in its natural process of evaporation; and this will account for the higher strata of light clouds that move above the heavier strata below, and in quite a different direction from them.

Because we cannot avoid these things, or the reception of the *evil* effects from a storm as well as the good, it is no reason and does not become us to be satisfied with no knowledge of the storm, and to remain in ignorance of the beautiful laws that it obeys. Poor human nature is powerless to avoid many things detrimental to our interest and comfort (or what seems such), growing out of the workings of nature. But this will never deter the wise from advancing as ~~far~~ as it is possible for their faculties to lead them into the labyrinths of nature, whereby they may at least learn some points of the workings of Providence; and knowing these, have some little knowledge whereby they may understand how the effect is produced, if they have no power to control it or to trace it up to the full understanding of the Great First Cause in nature. The Great First Cause has been concealed from us for many ages, and this subject of the weather is not alone in not being advanced to a revelation of this great desire of the human mind. To trace it up to this point is all the human mind, in this sphere of existence at least, can expect or hope to attain unto.

To go back to the storm of the 15th of August, we seldom have a more marked exhibition of these meteorological changes. The changes which resulted in this storm were as marked as black against white; therefore making such a storm a fine instructive and positive illustration of the principles herein advocated. Prior to this day low barometer had been repeatedly traveling on a high line of latitude—about on a line between the United States and the Canadas, causing southerly winds which necessarily resulted in making it exceedingly hot all to the south of this line, and dry because the clouds that upheld the moisture were car-

ried beyond the lines that would affect ~~also~~ the Washington ~~line~~, or about 10° south of the center of this area of low barometer, or the storm center. For some reason, at present beyond the knowledge of man, the area of low barometer changed its course the next time, and instead of repeating itself in the Northwest, as it had done about all summer, started in the Southwest; so on the 15th of August, we in the Northern States had a sudden change of wind and consequently change in temperature, with good prospects of rain. In place of a south wind we had a north wind. Here in Washington it was almost cold enough for a fire. Late in the afternoon we had a little rain, which proved to be only the forerunner of a great storm. That night it was very cold for midsummer, the area of low barometer being to the south of us. The next day (16th,) here in Washington it was sultry and warm. Why this latter change? Simply because the very center of the area of low barometer was directly over and about us, and we again necessarily had the wind from the south. On the afternoon of this day (16th), it began to rain in heavy showers. These showers grew more and more frequent until toward evening it set in to one continuous and heavy rain, with a continuation of the warm temperature. Low barometer was passing over us still, to the Northeast. From the 17th to the 18th they got the storm up in New England. Some time during the morning of the 18th the area of low barometer passed off the coast, the center about on a line of 35° degrees, with lines reaching to the North, covering a good portion of New England. It continued to rain in Washington until about ten or eleven o'clock, but not very heavily. It was evident that the storm had spent its fury so far as this locality was concerned; but for localities further to the East and Northeast, they were just beginning to feel the results of the storm which were reported in the morning papers of the 19th of August as being very heavy, and the heaviest of the season.

Course We know the ~~cause~~ of low barometer on the land. By the aid of the telegraph it is easy to trace it; but its course on the ocean is yet unknown. Still, as remarked in the "New View of the Weather Question," it may be the reverse of what it is on land. I see no good reason why it should not travel after the same manner as on the land. Yet as illustrated not only in this storm but in many others, and in fact, almost always, the area of low barometer, when it passes off the coasts causes a northwest wind, proving either that the center of *low* must have passed to the southeast, else that another area of low barometer must almost always at the same time be in that locality (Devil's Corner), and of sufficient force to counteract the effect of the *low* that has immediately passed off the coast in our locality. We can not prove this, however, pro or con, until we can have some ocean stations, or till Congress will authorize a number of its idle naval vessels to be stationed along the coast, and to be in readiness and under the control of the Signal Office, to start at the proper time when a *low* is passing off the coast, and follow it up. Let not a hasty judgment be formed on one trial; but let it be repeated a number of times. For only by some such means can we hope at present to practically solve this question as to the direction of *low* along our coast.

This, as a scientific question, is well worth the trifling additional expense that it would cost the Naval Department to accomplish. Money expended in the interest of science is a gain and not a loss. It is a benefit to mankind, and one I think that the public would, on a full understanding, appreciate and endorse. It is well to move slowly in such matters; yet it is not well to retard the accumulation of wisdom, for thereby we only rob ourselves.

Phrenologically speaking "continuity" is large in the human race. We see evidence of this when any new idea is advanced, at least any idea that does not promise an immediate and profitable financial return. Yet many ideas, and perhaps most of the ideas that the world is slow to accept, are really of far more value even financially, than others that externally seem to be what are called good investments, and which the world are so eager to grasp. In many things the world is exceedingly short sighted. There is too little faith in the great moral principle embodied in that phrase "cast thy bread upon the waters for thou shalt find it after many days."

We want more "long headedness," more faith in what is right and true, and in those great principles that are of far more real value to the world than mines of gold and silver. In this subject of the weather there is much satisfaction and practical benefit. It should be more universally studied. Then it will be more easily understood. Every college in the land should take and peruse the weather-map as regularly as a well-to-do citizen takes the daily paper. This done, and in a short time the spirit of the weather question will reveal itself to the intelligence of the world, and through this grand power raise the weather question to an honored rank with the other noble arts and sciences of the earth.

The next area of low barometer that was developed in the West started on a higher latitude, the natural result of which was a return of hot weather, though not so hot as prior to the 15th of August, for three reasons: first, the area was not on so high a line of latitude; second, it having been cold, it necessarily took some time to heat up again; third, the sun was daily getting further and further to the south, therefore making it generally cooler at the north.

This fact of a return of low to a higher line of latitude, and the results therefrom, is simply noted here as a proof that low, as an agent or sub-power of the sun, was the controlling element in the case.

All science has its exceptions, or what appear to be such; so we have the saying that "exceptions prove the rule." What may be termed "exceptions" ~~are~~ simply the predominance of the stronger element. Nature is not so evenly balanced in any department as to have one train of results follow another like clock-work. There is always a struggle. That force which is strongest for the time being will prevail, whether it be heat or cold, or the advantageous position or relation of chemical attribute—a simple predominance of some element in the scale, so far as our faculties are concerned, making quite another whole out of the same parts. Why this is so, is a mystery to us—one of the mysteries to be solved in the ages to come—and only by analogy, it would seem, could we get a clue to the

unraveling of this mystery of nature. But for this element—the *predominance of the strongest force*—which may be termed a law in meteorology as well as in other things, we would not have the variety that is so often experienced. We would tire of a monotony, or be so affected by its results as ourselves to become monotonous beings and unable to cope with any of the untoward and trying circumstances that are so common in our every-day life. Nature, by her changes, her exceptions, drills us in a school that harmonizes with all her action,, and thereby prevents us from falling into any sluggish ways. She thereby sharpens our faculties and prepares us for higher and higher attainments. To ever be prepared for the “exceptions,” should be one of our guiding rules through life.

About two months later (than the 15th of August), we had a change of quite a different character. Sunday, October 19, 1879, we had another remarkable change in the weather, which, it would seem from the map of the preceding day (18th), should not have been; for on the 18th of October it was, and had been, very warm for the season. At 7:35 a. m. the thermometer at Washington stood at 69°, and through the day the heat greatly increased, and it seemed like summer. The center of low barometer as to longitude was about on the line of 82° east from Greenwich—north of Ohio, in Canada—while its center as to latitude was about 47.30° north, making it generally warm over the greater portion of the United States east of the Mississippi River. This being the condition of things on the 18th of October, we in the vicinity of Washington expected that it would be hotter, if any change, on the 19th, and perhaps we might have some light rain. It was quite cloudy, it “felt like rain,” and the weather map for this day if anything bid us expect a light rain. But on the 19th, instead of being warmer with a light rain, it became quite cold. A northwest wind carried all the clouds away and left the sky so clear that night that stars of the third and fourth magnitude were as plainly visible as on a clear, cold night in winter, and such small constellations as the “Dolphin” stood out in bold relief, it being a most beautiful night for “star gazing.” Monday, the 20th, it was still cool and pleasant, though as the day advanced it began to get cloudy. The 21st it was much warmer, and we had a fine and gentle rain—the rain, it would seem, we should have had on the 18th.

All this time the Low that was to the north of Ohio on the 18th had been traveling eastward, and the maps of the 19th and 20th showed Low where it ought to have been, viz: in the northeast. On the 21st, in Washington and vicinity, we again felt the effects of a northern Low, with mild weather and rain.

Why did we not have this rain before, and why have it now? Why a clear sky and cold, when it would have seemed that we should have had it warm with light rain? Why this double sudden change—first from ~~rain~~ to cold and moisture to dryness; then from cold to warm with rain? *Warm*

There is one feature in this area of low barometer that is peculiar (yet it was referred to in the “New View of the Weather Question,” published in the REVIEW, July and August, 1878); that is, a large area of low barometer will occa-

sionally divide up, and, in place of one large area of LOW, we have two or even more smaller and more concentrated ones. On the present occasion this was evidently the case, though it can only be proved under such circumstances as this happened to be, *a posteriori*, as the lower portion of the area of low barometer had passed off the coast. When this effect takes place on land, which it occasionally does, there is no trouble to prove it beyond all doubt. So there is no doubt but that it does take place, and when it takes place certain conditions of change are sure to follow. Now, when these changes are similar, even though this point has passed off on the ocean beyond our reach, we have conclusive evidence, particularly from the direction of the wind, as to where this area of low barometer must be, for, though the "wind bloweth were it listeth," it *always* "listeth" to blow toward LOW. From this fact we may, relatively to us, locate the direction in which lies the area of low barometer. On this occasion (October 19 and 20, 1879) it was as cold in Washington as in the northern part of New England, for the reason that we here had a northwest wind, while they had a southerly wind. Seven degrees of latitude would at this season of the year, under ordinary conditions, make a great difference in temperature; but on this occasion the wind that made it cold here came from further north than New England, while in the higher latitude of New England the cold was counterbalanced by winds from the south toward the northern area of low barometer on this occasion. This lower portion of the area of low barometer, which here caused a northwest wind, passed beyond our limits; so on the 21st we ceased to be affected by it, but were affected, or re-affected, by the area of low barometer that lay to the north of us, it being a continuous part of that which had passed off the coast on the 19th and 20th. Then followed a sudden change to warmer weather with rain, or taking up of the weather of the 18th—going back to it, as it were.

It is useless to refer to a multiplicity of these cases, unless their condition and change are uncommon. I will, however, mention one more case—one not so uncommon as these other two, but to show what effect the area of low barometer has upon the weather, making it relatively warm or cold without much regard to the season, be it winter or summer; that is, making it very warm for winter or very cold for summer.

December 3, 1879, an area of low barometer started in the West about on the latitude of Washington. On the 4th it was very well developed west of the Mississippi. The indications were that it would reach Washington about the 6th (Saturday), and, if it kept on a low line, make a cold north wind here that would result in a snow storm. But, as the area of low barometer almost invariably trends as it advances toward the east more or less to the north, the chances were more in favor of rain than snow. If LOW followed its usual course, it would rain, and be a warm rain at that. On the 4th it began to be cloudy here. On the 5th the cloudiness increased. On the afternoon of the 6th the advance of the storm proper, or rain area, reached Washington, and increased as it advanced. Toward evening the rain came in abundance, and the temperature continued very mild.

This mildness of the weather here proved that the center of the storm was to the north of this locality. From the effects of this Low the weather was very mild for a number of days, proving that, though a winter month and the sun in the southern solstice, it will not be very cold so long as the area of low barometer is on a high latitude.

The area of low barometer immediately following this (of the 4th of December to the 8th), from the 8th to the 12th of December, went over almost the same ground and produced the same effect. It continued warm and commenced to rain, and cleared off in the same manner and in almost the same time to an hour. And thus it will do every time—like ~~effects~~ ^{causes} in this, as in other branches of science, will produce like effects.

In the storm of the 15th of August, as to temperature, we had an illustration of the effect of a low barometer in a low latitude in summer. On the 6th and 11th of December, in the same place, we had an illustration of a low barometer in a high line of latitude in winter. The effect of the former was to make it unseasonably cold in summer; the effect of the other was to make it unseasonably warm in winter. Whenever these conditions occur like effects will follow.

[Seeing that there was a little delay in the publication of this article, the writer concluded to insert a few additional comments on the warm weather that we have had thus far this winter—January 10, 1880.]

Additional proof of the fact that Low, traveling on a high line of latitude causes it to be warm, is seen in the warm open winter which we have had thus far. Such weather—weather out of season—cannot be explained in any other manner; and this explanation is not only positive fact but as satisfactory as that heat will create warmth or that the magnet will attract iron. So long as Low continues to travel on this high line, so long will we have such results, and the higher the line on which it travels the warmer will it be. Not until Low travels on a lower line of latitude will we have cooler weather, and the lower the line on which it travels the colder will it be. On the latitude of Low depends the temperature of our planet—at least away from the immediate vicinity of the equator. Cold summers are caused by Low traveling on a low line—warm winters by it traveling on a high line. The fluctuation of Low is the great cause of the changeableness of our climate from season to season.

The location of the area of low barometer, as it were, defies the seasons. It is the great leveler and intensifier of heat and cold, dispensing its gifts without regard to seasons, bringing heat here and cold there at will, defying the apparent natural condition of summer and winter, tempering the heat of one and neutralizing the cold of the other. A sort of uncertain, capricious power that develops weather out of season, introducing sudden changes, transporting the sun's heat hither and thither quite in opposition to the location of the sun's position in the ecliptic, probably the most capricious, uncertain and mysterious power in all nature, the re-adjuster of temperatures—such is Low.

We know that Nature is abundant in her changes; yet the laws that gov-

ern the weather are not unlike any other laws of nature. The whole is after one grand general plan with infinite varieties in detail.

Perhaps some persons may think these comments and explanations ingenious rather than true. Let any one who may think so examine the weather maps for the days herein mentioned. These maps are not made to order to fit the storm, but are made prior to the storm—in advance of it. In other words, the conditions that will cause the effect are put into a stereotyped form and thus proclaimed and advertised to the world long before the storm reveals itself to the senses of man. A person who can doubt such evidence as this can have no faith in anything. Then, as a writer on this subject, I have no desire nor aim in making any other statement than the records of the daily weather maps will warrant. It would be foolishness in me to make any statements that are not positive facts for the mere purpose of sustaining any pet theory. Whether the facts will warrant the comments, that is another matter. They are here made with the utmost personal confidence in them, and they are intrusted to the future. Let the future disprove them if it can; so long as the interest of this department is advanced, it matters little. In this connection, let it be borne in mind that this science is yet in its infancy, and in this state it may not be unnatural to make some false steps, though the direction, as a whole, may be in the direct line of truth.

The more one studies this subject the more beautiful are its revelations and the more forcibly does it present itself that there should be more stations, especially in the Southwest—in Mexico—and that steps should be taken either to induce Mexico to establish a number of stations—say one on a square of every hundred miles—or else give the United States the privilege to do so, and in either case to have the daily reports transmitted to Washington, as are all the other reports. The Government should also exert itself to establish a station in the center of the Gulf of Mexico. This, with a few more stations in the extreme West, would give the United States a far more perfect and a most complete weather system.

Within ten years we have accomplished wonders in this line. The publication of the daily weather maps has proved to be one of the grandest inventions, acquisitions and incentives to science that the world ever had. Facts have been obtained and utilized that, but for this system, must have lain concealed with no hope of a resurrection or bringing to light.

It would seem to be wise in us not only to continue the present work, but to extend its borders, for thereby we extend its usefulness and add wonderfully to our storehouse of knowledge of the works of the Great Jehovah—the Great Architect of the Universe.

WASHINGTON, D. C. December, 1879.

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